جامعة الأهرام الكندية
AHRAM CANADIAN UNIVERSITY

كلية طب الفم والأسنان
Faculty of Oral and Dental Medicine

Class I Malocclusion Treatment

Diagnosis
Define The Problem

- **Logic Thinking:**

➡ Intra-arch

➡ Inter-arches in Three Planes:

Anteroposterior

Vertical

Transverse

➡ Growth

Problem List

- General:

  Caries, Periodontal, Impactions, Congenital absence, Peg lateral and so on.
- Face: Profile, Lips, Smile.
- Anteroposterior:

  Molars and Canines Class II/III

  Overjet/Anterior crossbite

  Dental Protrusion

Problem List

- **Intra-arch:**

  Crowding/spacing, archform, asymmetry.

- **Vertical:**

  Overbite/Openbite.

  Dolicofacial/Brachyfacial.

- **Transverse:**

  Midlines.

  Posterior crossbite (Skeletal/Dental).

  Functional shift/Asymmetry.

Objectives

- **Specific Objectives:**

  - Dental Changes.
  - Skeletal Changes.

  Cephalometrics:

  Three Planes of Space.

  Molars and Incisors.

Possibilities for tooth movements and / Skeletal changes and Limitations.

Expanding The Upper arch Dentally and /Or Skeletally

- **Problem:**
  - **Posterior crossbite**
  - **Crowding/Gain arch length**
- **Appliance:**
  - **Quadhelix**
  - **Rapid palatal expander**
  - **Hyrax expander**
  - **Transpalatal bar**
  - **Lip bumper**
  - **Archwire offset**
  - **Cross elastics**

TRANSVERSE

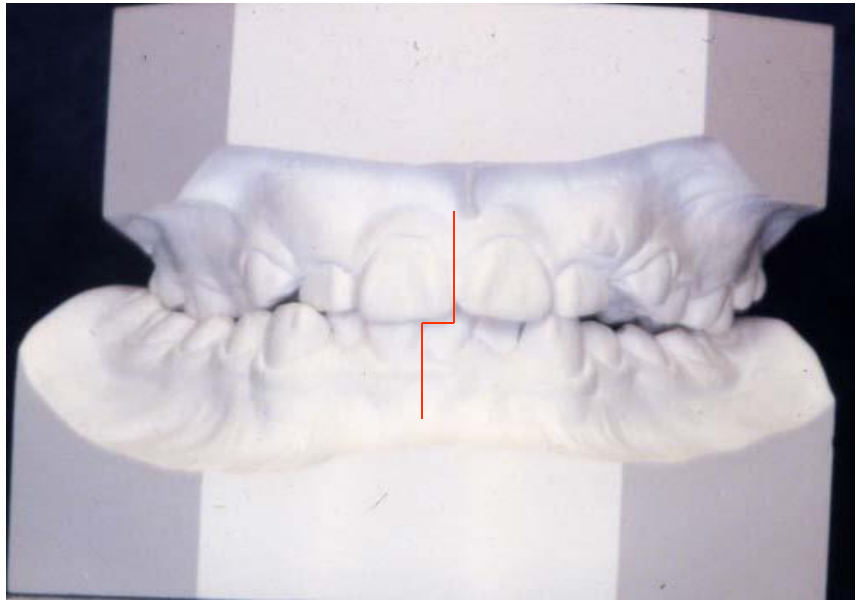
- **UNILATERAL POSTERIOR CROSSBITE**
- **BILATERAL POSTERIOR CROSSBITE**

MIDLINE DEVIATION

- **TOOTH SHIFT ACROSS MIDLINE**
- **FUNCTIONAL (POSTURAL) SHIFT OF THE MANDIBLE**
- **COMBINATION**

TRANSVERSE DIMENSION

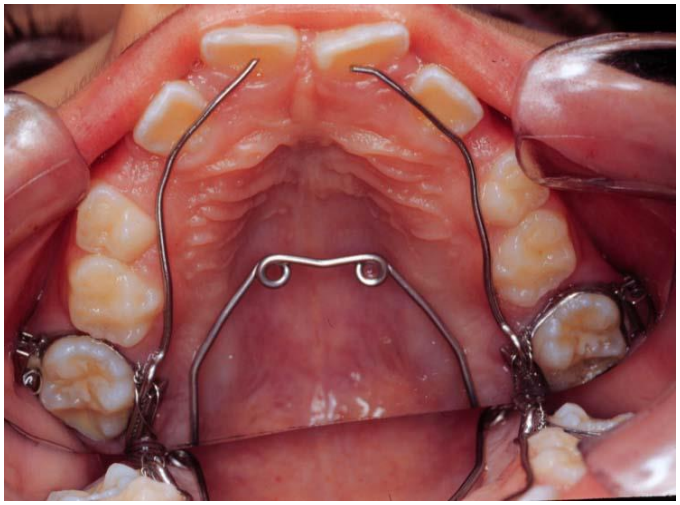
RIGHT UNILATERAL
POST. CROSSBITE
FUNCTIONAL SHIFT



INITIAL CONTACT POSITION

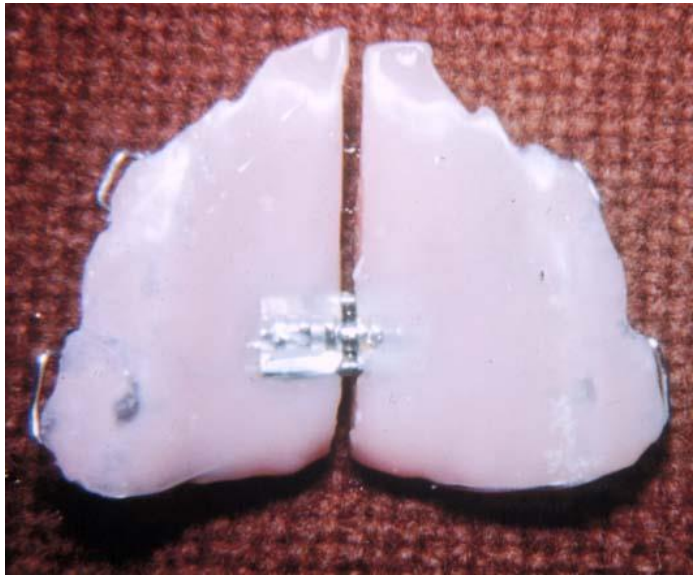
MAXIMUM INTERCUSPATION

DENTAL+/SKELETAL EXPANSION
QUADHELIX EXPANDER

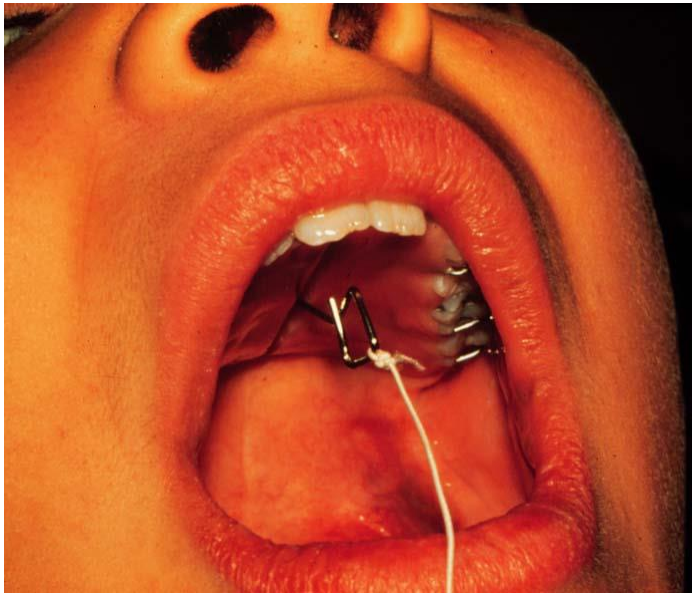


FIXED BANDS AND REMOVABLE WIRE

DENTAL+/SKELETAL EXPANSION
REMOVABLE EXPANDER



FULL COVERAGE ACRYLIC
CLASPS
MIDLINE EXPANSION SCREW



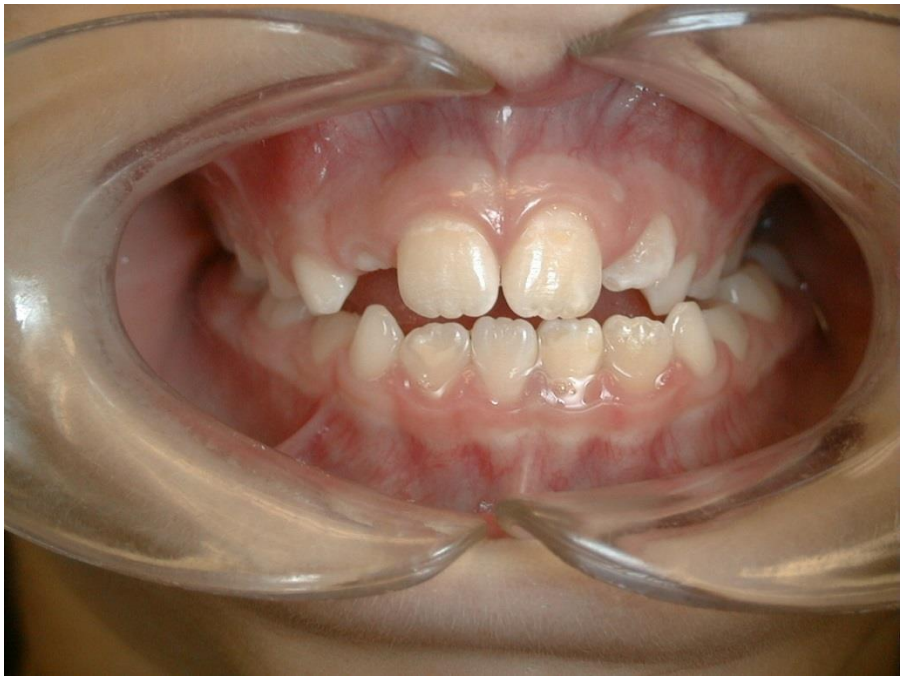
EXPANSION KEY

5 MONTHS

2 TURNS/WEEK

Dr. Ahmed Basyouni

FIXED ACRYLIC EXPANDER

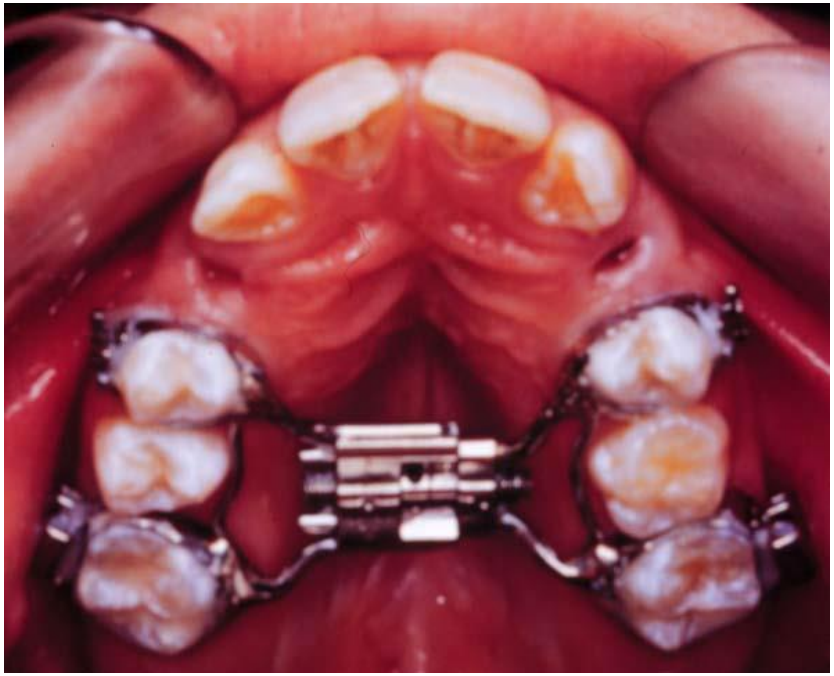


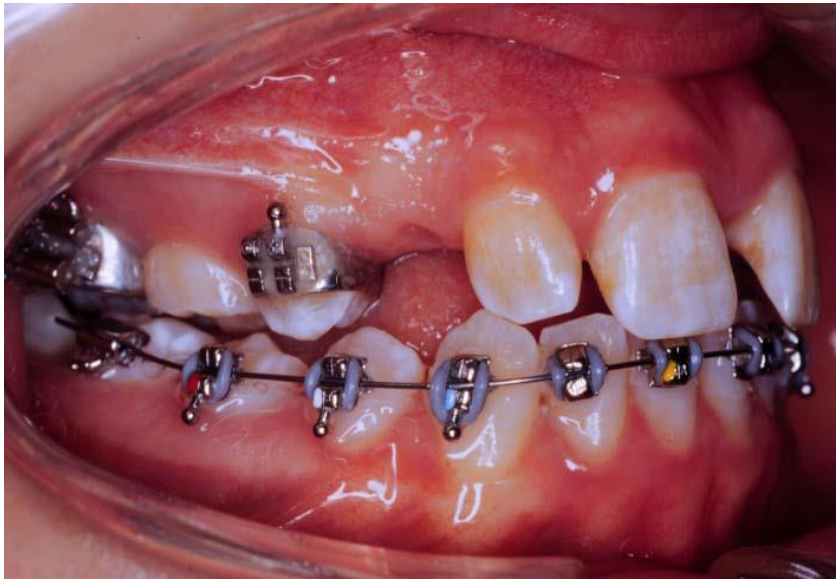
SKELETAL/DENTAL EXPANSION
RAPID MAXILLARY EXPANDER
TOOTH-BORNE (HYRAX)

PRE TREATMENT

POST-EXPANSION
MIDLINE DIASTEMA

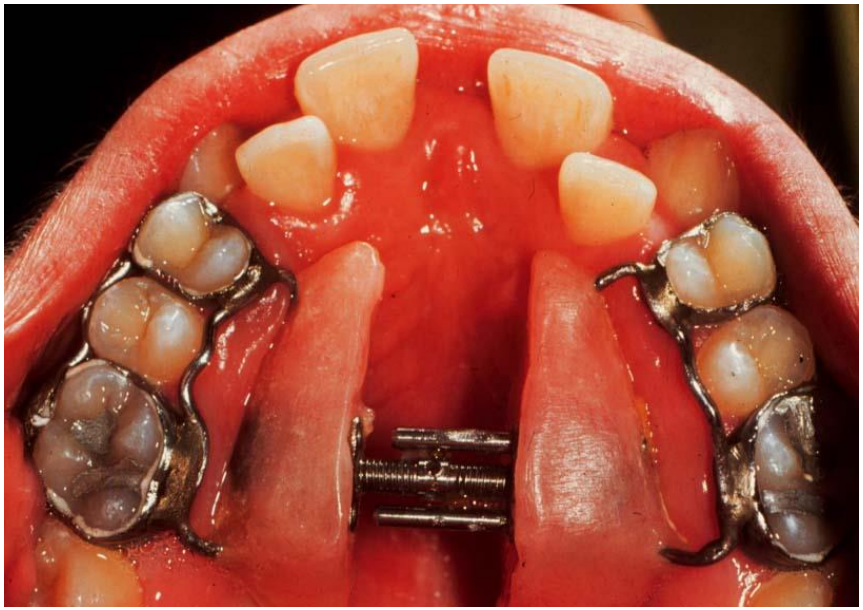
SKELETAL/DENTAL EXPANSION
RME HYRAX



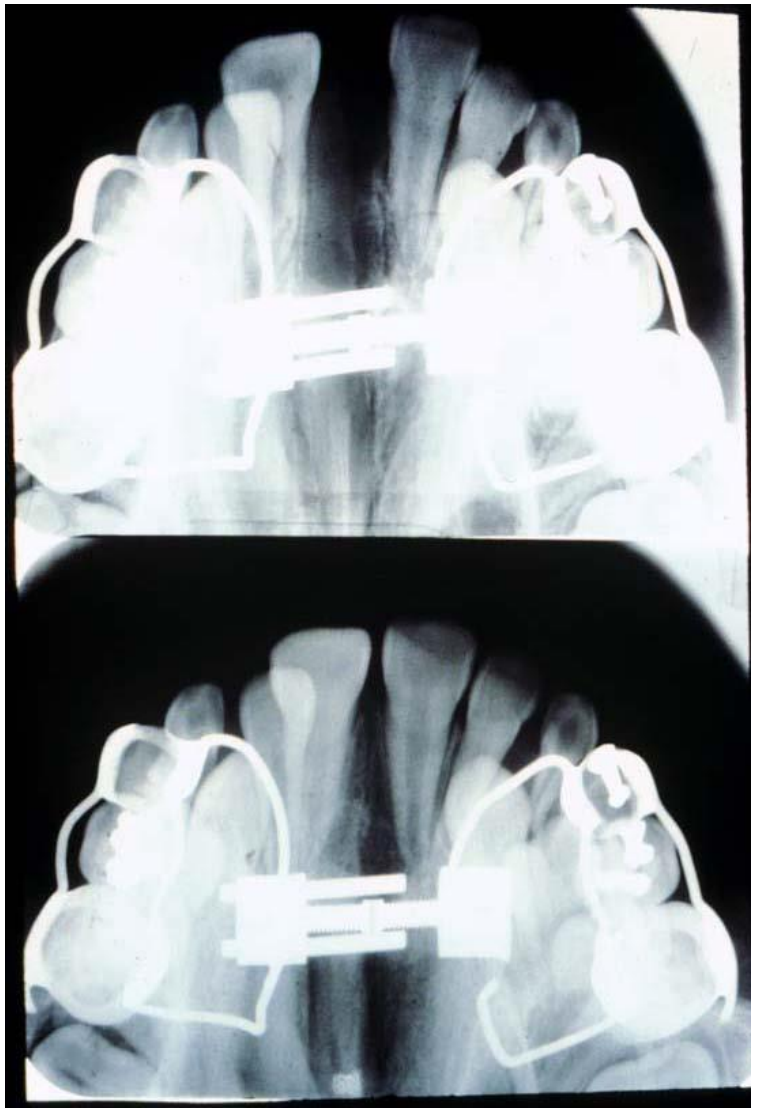


FIXED TO FOUR BANDS

SKELETAL EXPANSION
RME
TISSUE-BORNE (HAAS



FOUR BANDS
BUCCAL + PALATAL WIRES
PALATAL ACRYLIC



MIDPALATAL SUTURE
OPENING

SKELETAL EXPANSION
RME
BONDED EXPANDER

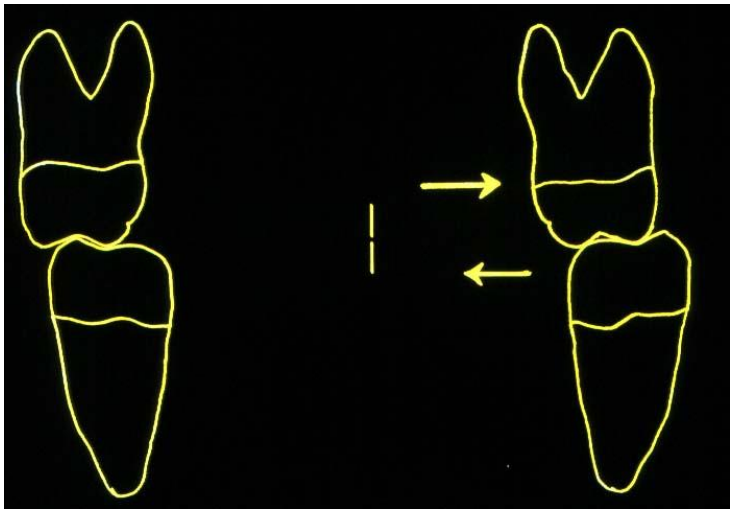
PRE TREATMENT
BILATERAL POST. CROSSBITE
NARROW UPPER ARCH

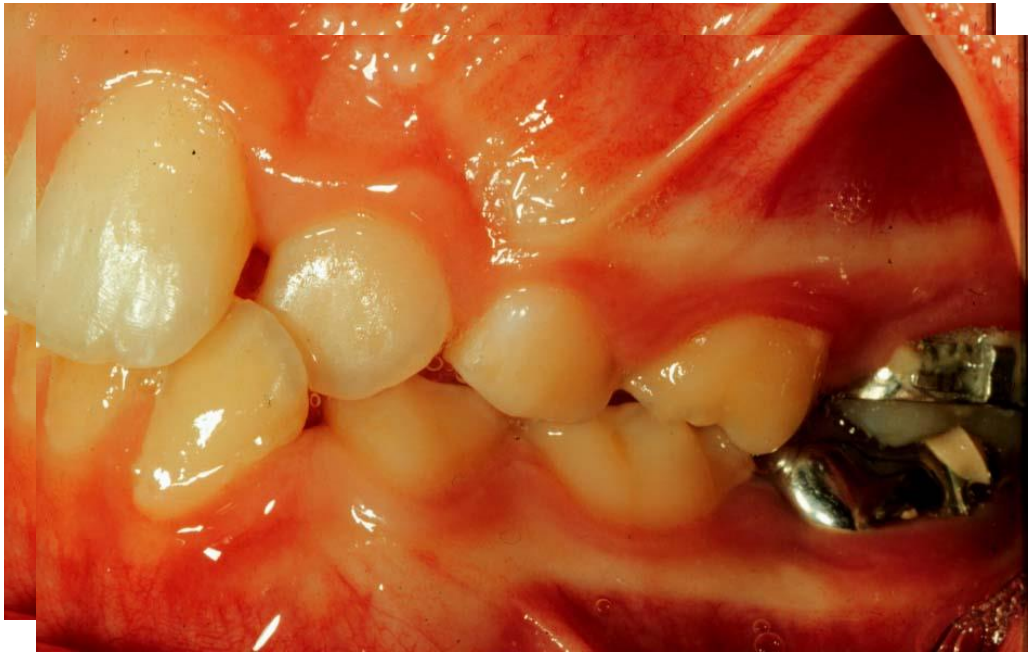
POST TREATMENT
SKELETAL EXPANSION

SKELETAL EXPANSION
BONDED RME

POST EXPANSION STABILIZATION

DENTAL EXPANSION





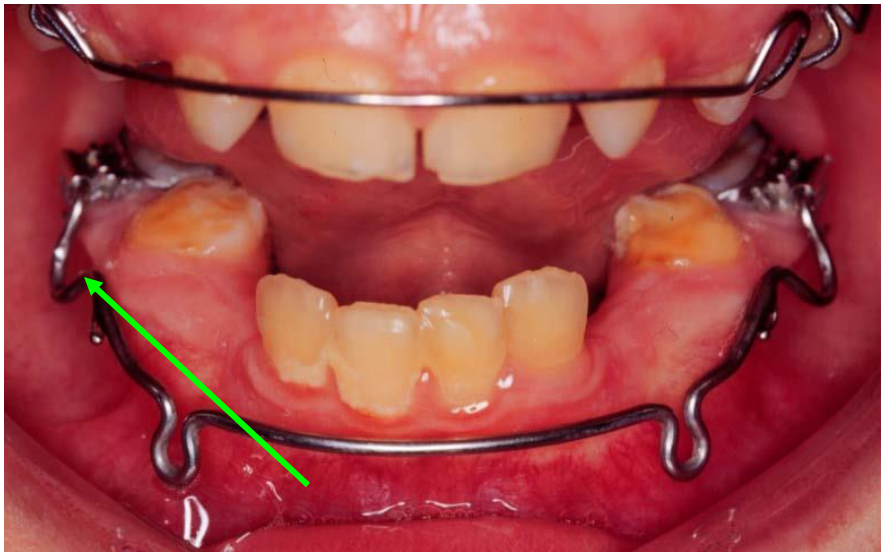
ONE TOOTH
POSTERIOR CROSSBITE
COINCIDENT MIDLINES

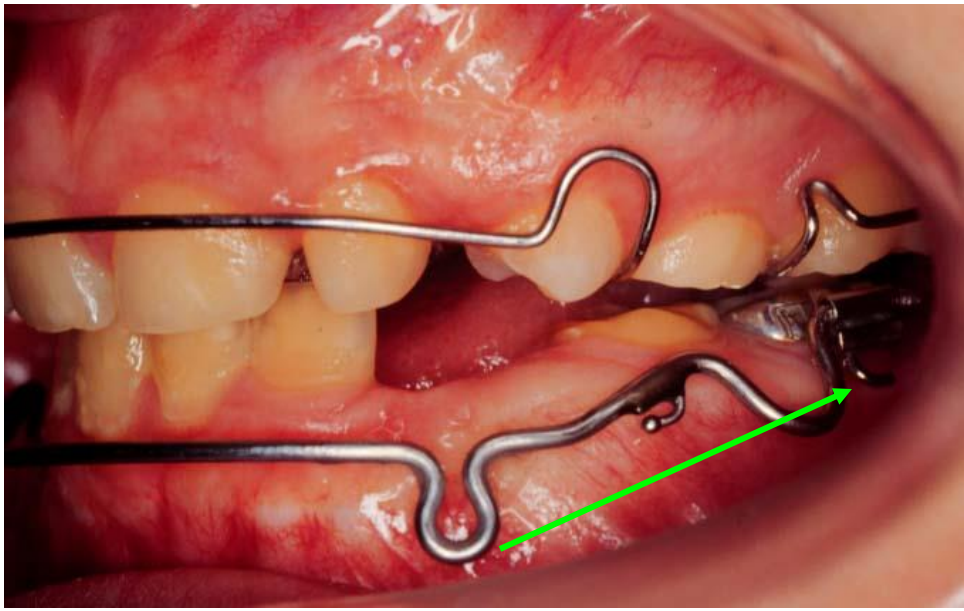
CROSSBITE ELASTIC
RECIPROCAL
TOOTH MOVEMENT

Crowding (Create arch length) and some A-P correction

- **Objective:**
  - **- Derotate Upp. Molars**
  - **- Hold/Distalize Upp. Molars.**
  - **- Maintain lower incisors anteroposteriorly.**
  - **- Hold/Distalize Low. Molars**
  - **- Expand premolars and molars**
- **Appliance:**
  - **- Transpalatal bar (TP), Quadhelix, Archwires, bumper.**
  - **- Headgear, Pendulum appl.**
  - **- Class III elastics, Lip bumper.**
  - **- Archwires, Quadhelix, bumper.**

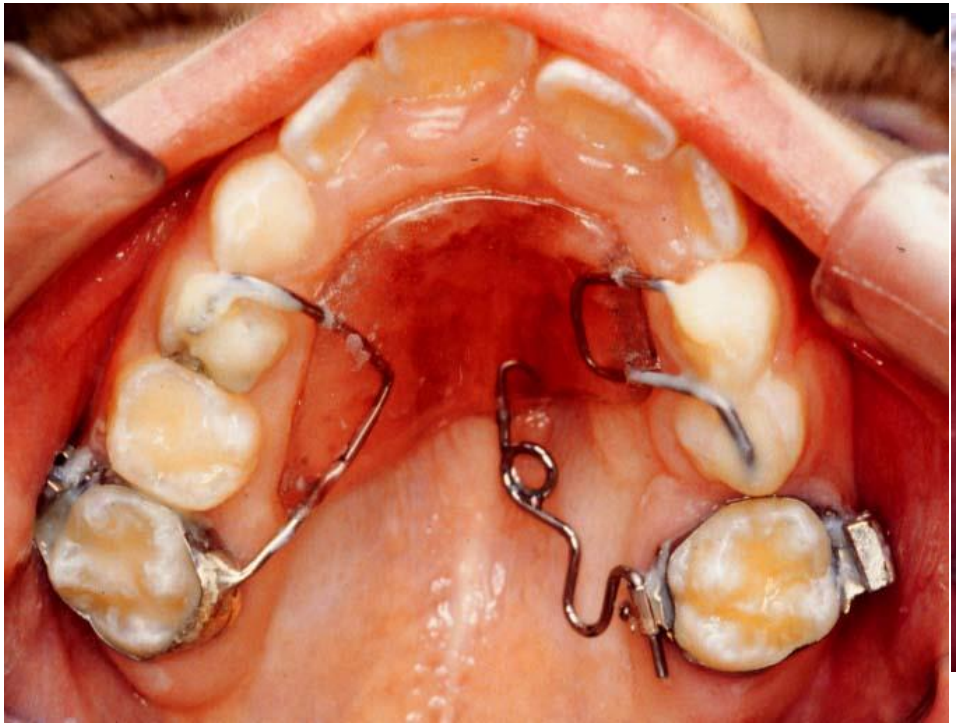
CREATE SPACE
HOLD/DISTALIZE LOWER MOLAR
ADVANCE INCISORS
TRANSVERSE EXPANSION (DENTAL)

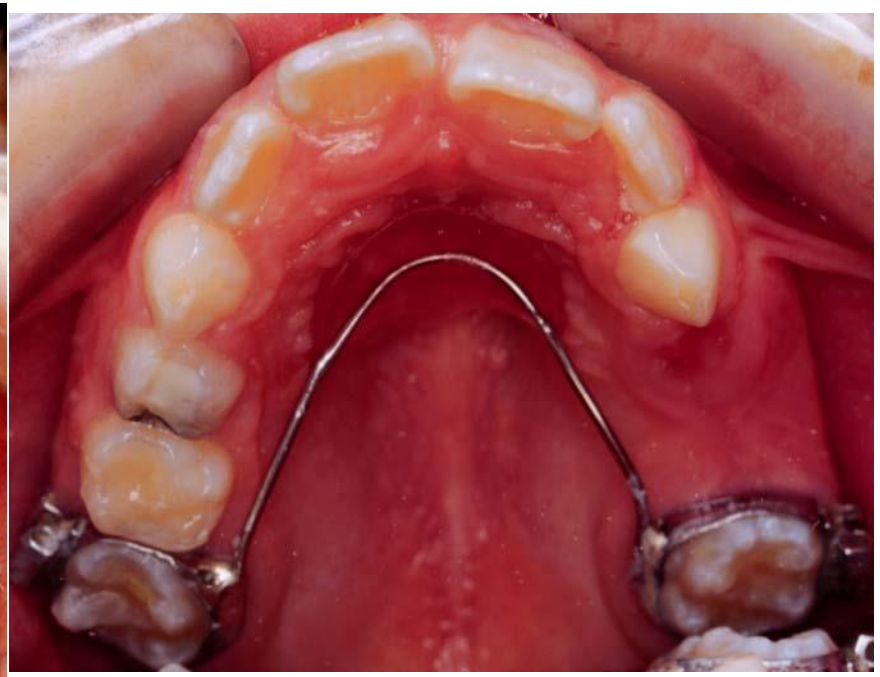




MANDIBULAR LIP BUMPER

CREATE SPACE
DISTALIZE UPPER MOLAR

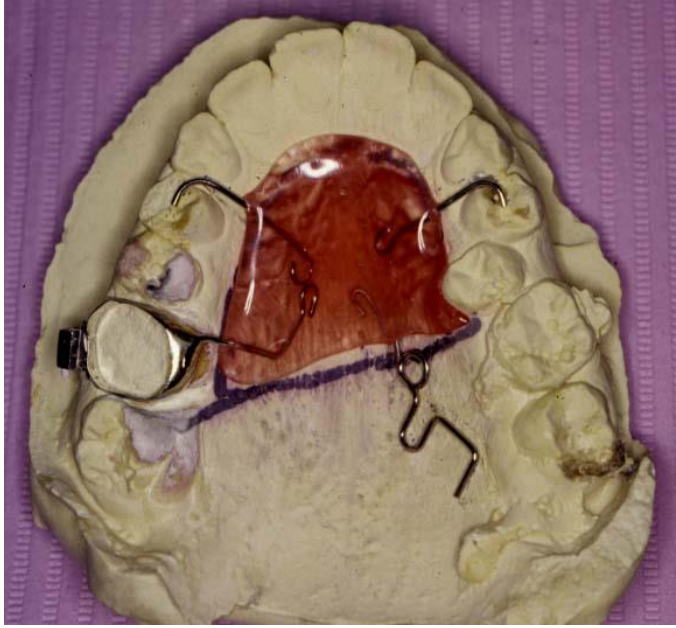




SPACE LOSS

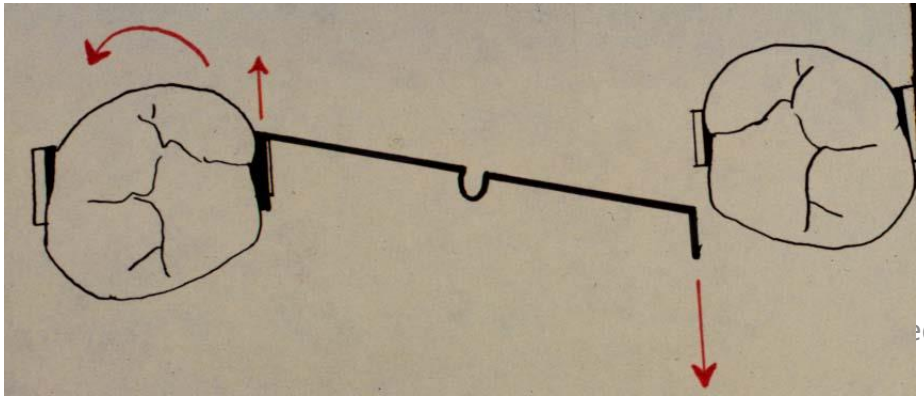
PENDULUM APPLIANCE
UNILATERAL/BILATERAL

POST TREATMENT
NANCE HOLDING ARCH



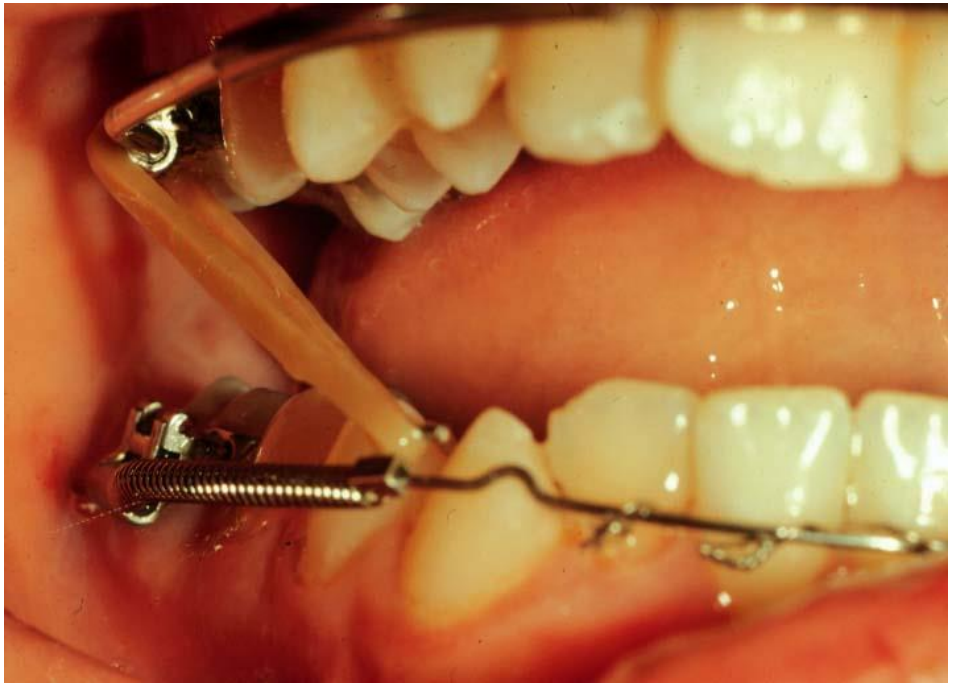
PENDULUM APPLIANCE-Unilateral

TRANSPALATALBAR- Unilateral



REMOVABLE APPLIANCE- Sectional screw

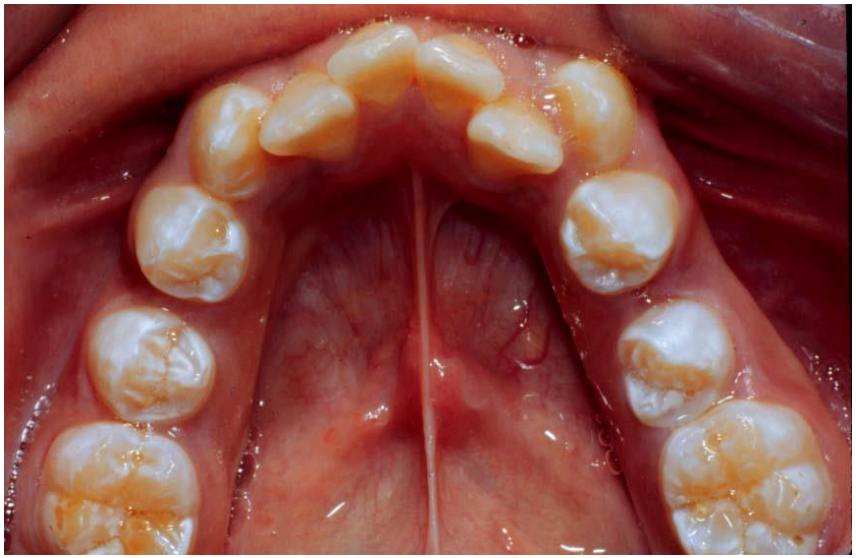
CREATE SPACE
DISTALIZE UPPER AND LOWER MOLARS
MAINTAIN/ADVANCE LOWER INCISORS
TRANSVERSE DENTAL EXPANSION



EXTRA-ORAL TRACTION
CERVICAL HEADGEAR

CLASS III ELASTICS
LOWER ARCH
COIL SPRING

MAINTAIN SPACE
LATE MIXED DENTITION



EARLY PERMANENT DENTITION
ANTERIOR CROWDING
LEEWAY (E SPACE)

MANDIBULAR
LINGUAL HOLDING ARCH

Resolving Crowding

- Non-Extraction Mechanics.
- Interproximal enamel reduction (Stripping).
- Premolar extractions.
- One lower incisor extraction

CROWDING
MIXED DENTITION

- **NON-EXTRACTION: LEEWAY SPACE AND HOLDING ARCHES/FIXED APPLIANCES**

- **EXTRACTION: SERIAL EXTRACTION/ERUPTION GUIDANCE**

MAJOR DECISION

EXTRACTION

- **EXCESS SPACE**
- **INCISOR POSITION**
- **ANCHORAGE**

NON-EXTRACTION

- **ADVANCE INCISORS**
- **DISTALIZE POSTERIORS**
- **EXPAND ARCHES**

The Specific Objectives should lead to the decision to extract or not to extract.

Crowding – Closing extraction spaces:

- **Objectives:**
  - **Lower Incisors:**
    - **Maintain**
    - **Retract**
  - **Lower Molars:**
    - **Maintain**
    - **Protract**

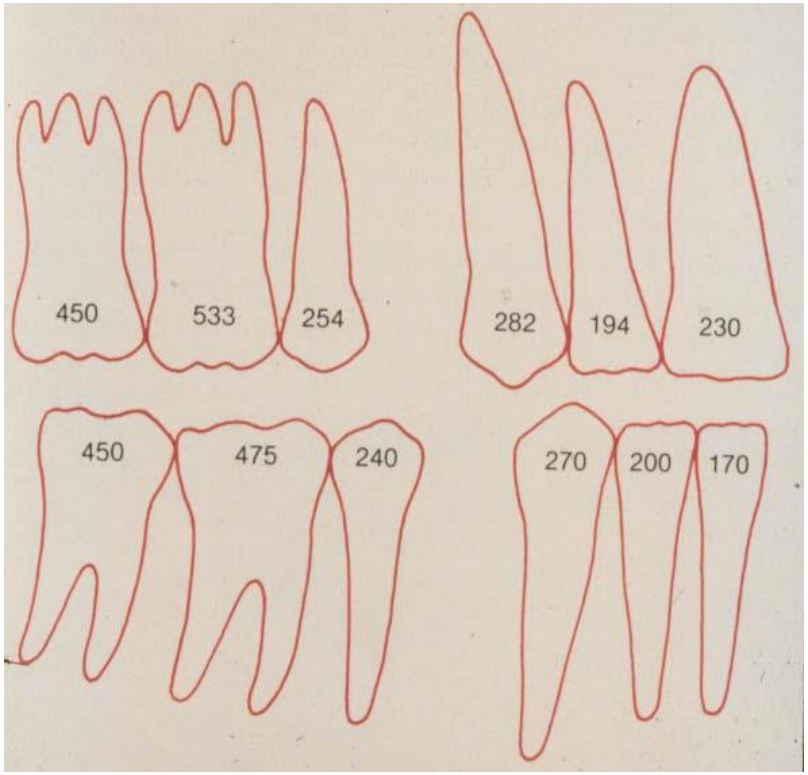
- **Mechanotherapy:**
  - **Maximum**
  - **Moderate**
  - **Minimal**

Crowding – Closing extraction spaces:

- **Objectives:**
  - **Upper Incisors:**
    - **Maintain**
    - **Retract**
  - **Upper Molars:**
    - **Maintain**
    - **Protract**

- **Mechanotherapy:**
  - **Maximum**
  - **Moderate**
  - **Minimal**

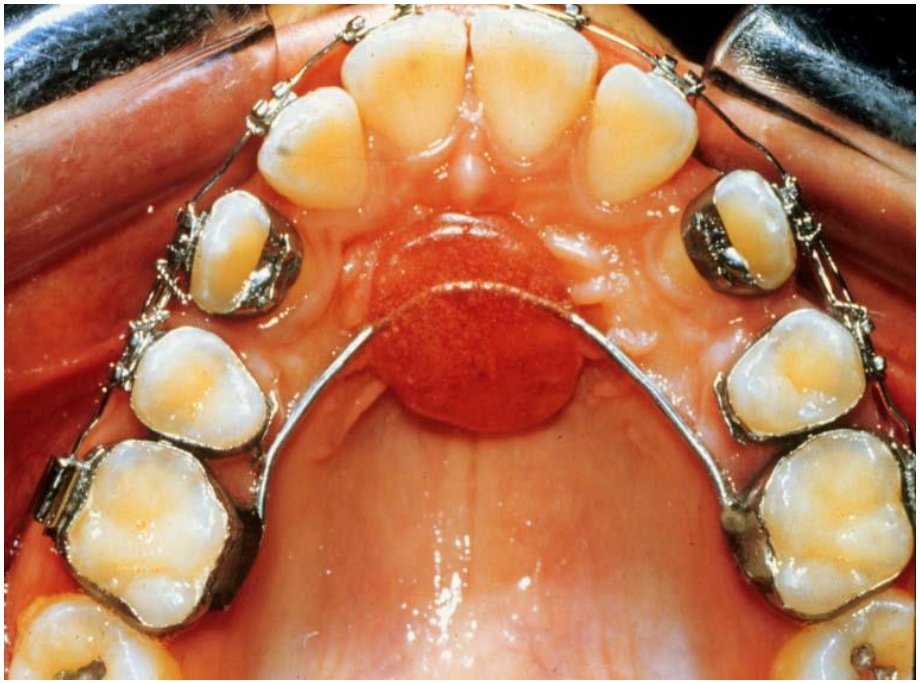
EXTRACTION MECHANICS
ANCHORAGE



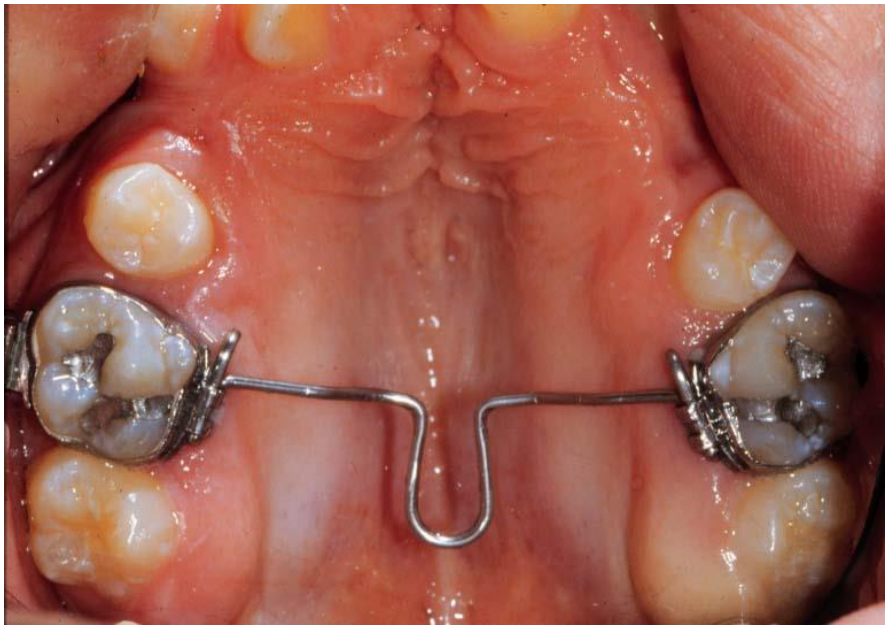
RELATIVE ANCHORAGE VALUES OF THE TEETH

MAXIMUM ANCHORAGE
EXTRA-ORAL ANCHORAGE
CERVICAL HEADGEAR

ANCHORAGE AUXILIARIES
-MODERATE ANCHORAGE



NANCE HOLDING ARCH



TRANSPALATAL BAR
(REMOVABLE)

CLASS I EXTRACTION CASE
CROWDING
DENTAL PROTRUSION

PRE TREATMENT

PROTRUSIVE LIPS
STRAINED ON CLOSURE

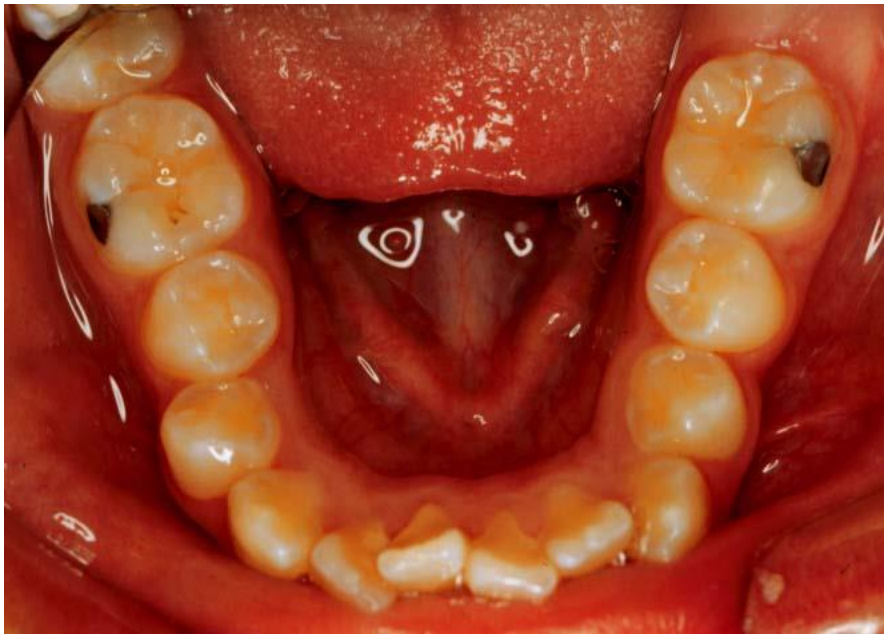
CLASS I EXTRACTION CASE
CROWDING
DENTAL PROTRUSION

PRETREATMENT
CLASS I (CLASS II TENDENCY)
INCREASED OVERJET

INCREASED OVERBITE

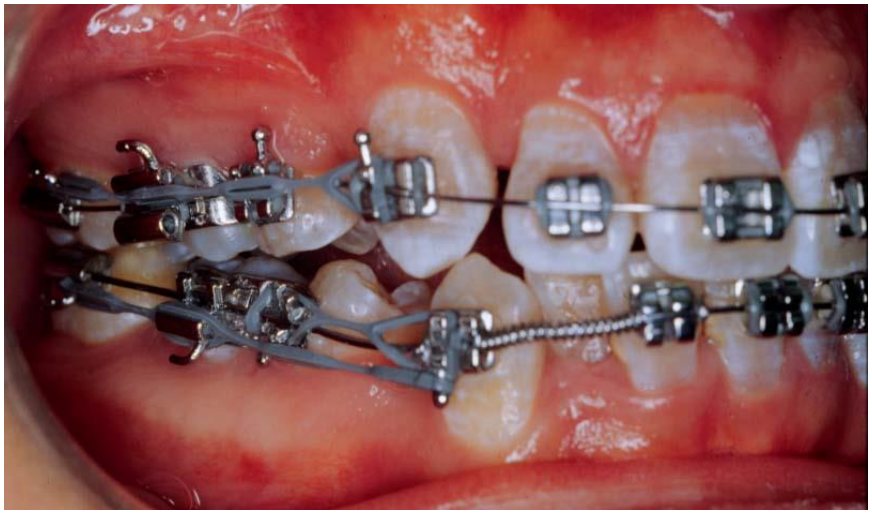
CLASS I EXTRACTION

SLIGHT UPPER CROWDING

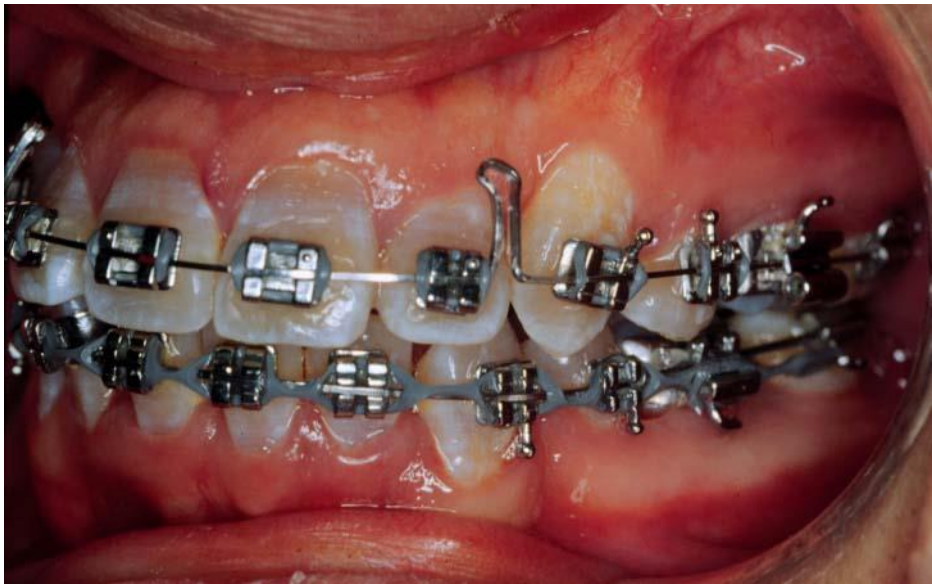


MODERATE LOWER CROWDING

EXTRACTION MECHANICS



ELASTOMERICS (C CHAIN)
PUSH COIL SPRING



CLOSING LOOPS
ELASTOMERICS

CLASS I MIXED DENTITION
SEVERE CROWDING
SERIAL EXTRACTION

PRETREATMENT

ORTHOGNATHIC
STRAIGHT/SLIGHTLY CONVEX
LIPS RELAXED

SERIAL EXTRACTION

PRETREATMENT
MIDDLE MIXED DENTITION
CLASS I
AVERAGE OVERJET+

ANTERIOR CROSSBITE
AVERAGE OVERBITE
POSTERIOR CROSS-BITE
(RIGHT MOLARS)

SERIAL EXTRACTION

POSTERIOR MOLAR CROSSBITE (RIGHT SIDE)
MIDLINES COINCIDE

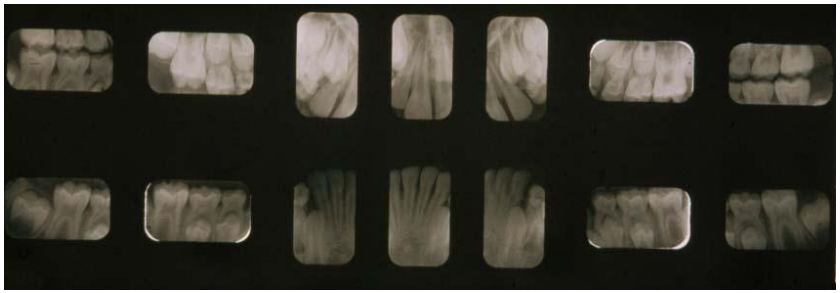
SEVERE CROWDING -MAXILLARY ARCH
MOLAR ROTATION

SERIAL EXTRACTION

SEVERE CROWDING MANDIBULAR ARCH

EXCESSIVE CURVE OF SPEE (DEEP OVERBITE)

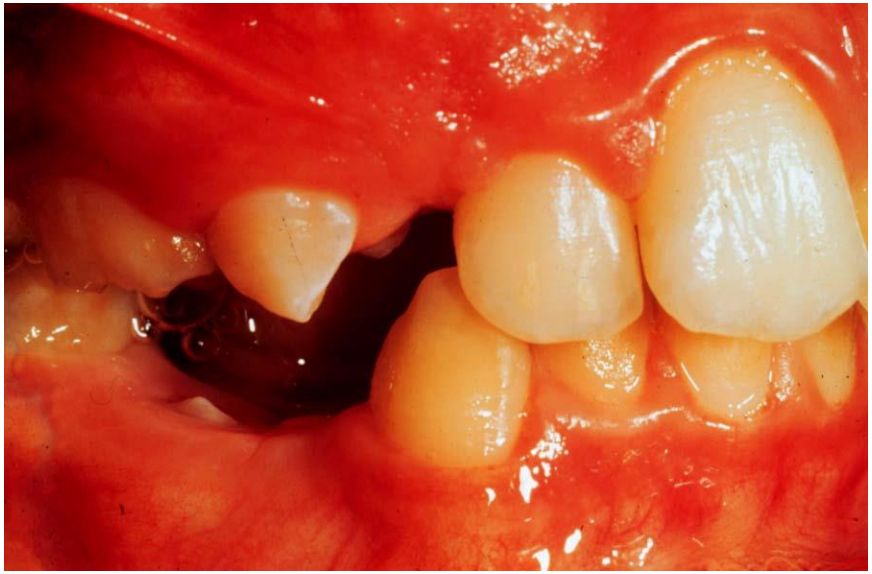
SERIAL EXTRACTION



INTRA-ORAL (Periapical) RADIOGRAPHS

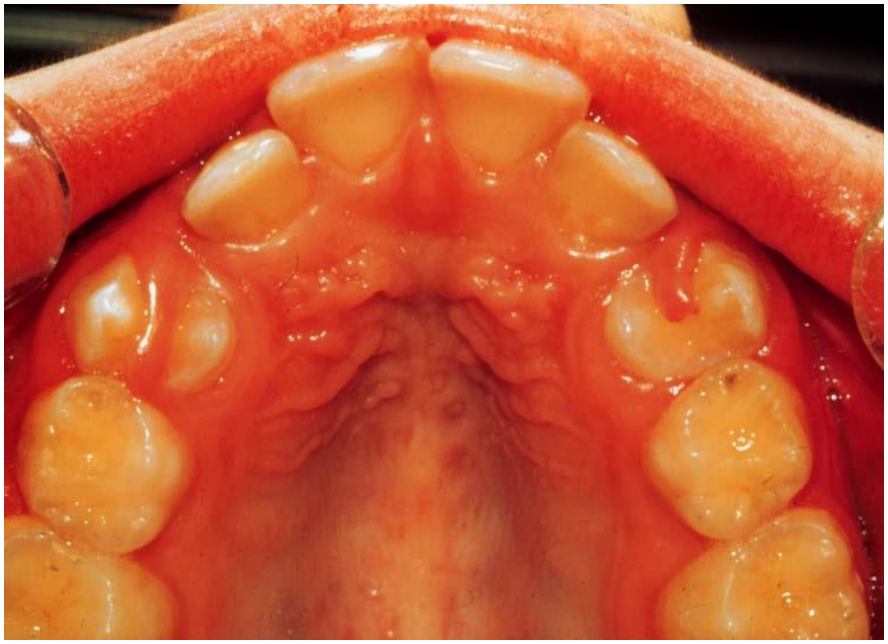
CEPHALOMETRIC RADIOGRAPH

SERIAL EXTRACTION



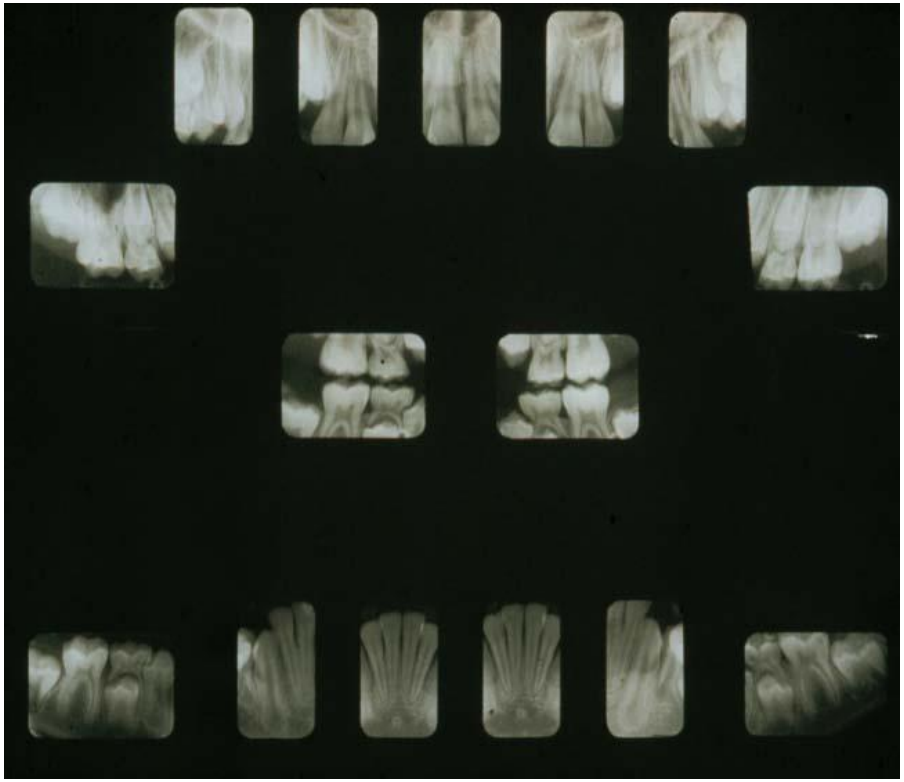
PROGRESS
PRIMARY CANINES EXTRACTED
AWAITING ERUPTION OF FIRST PREMOLARS

SERIAL EXTRACTION



FIRST PREMOLARS ERUPTING

SERIAL EXTRACTION

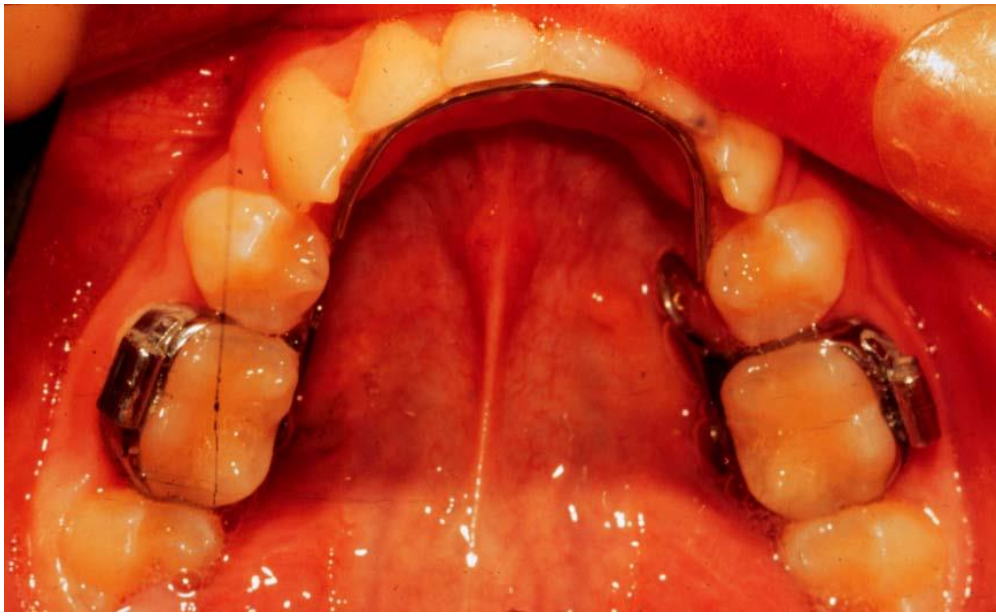


INTRA-ORAL RADIOGRAPHS

PROGRESS

SERIAL EXTRACTION

EXTRACTION OF
FIRST PREMOLARS
AND ERUPTION OF CANINES



LOWER LINGUAL
HOLDING ARCH

Objective: Advance Upper and/ or Lower Incisors

- **Problem:**
  - **- Anterior Crossbite**
  - **- Crowding-gain arch length**
  - **- Class II mandibular dental retrusion**

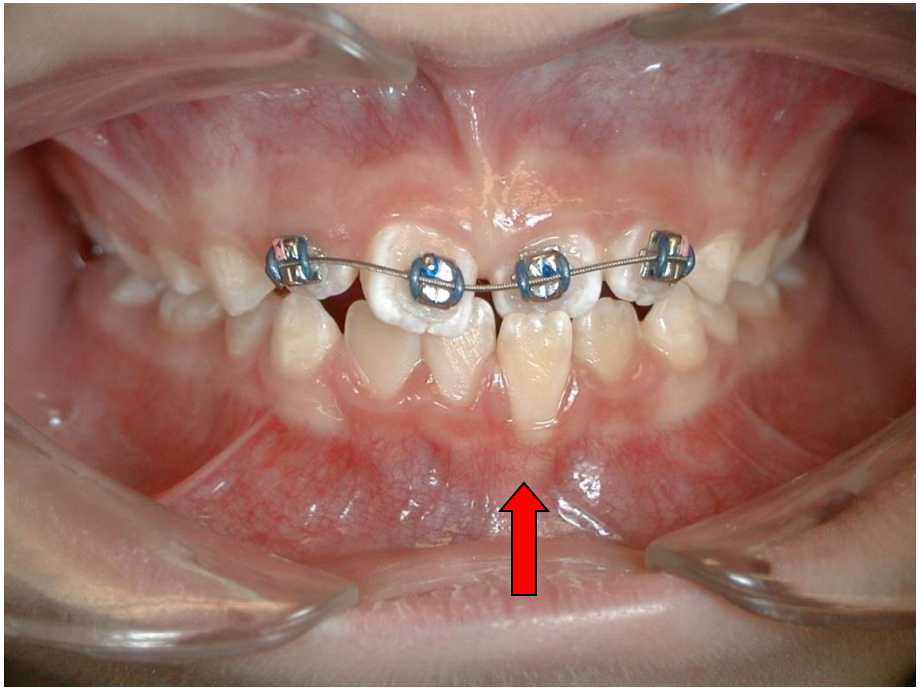
- **Appliance:**
  - **- Archwires, Utility advancement, Leveling wire.**
  - **- Class III elastics**
  - **- Class II elastics**
  - **- Lip Bumper**

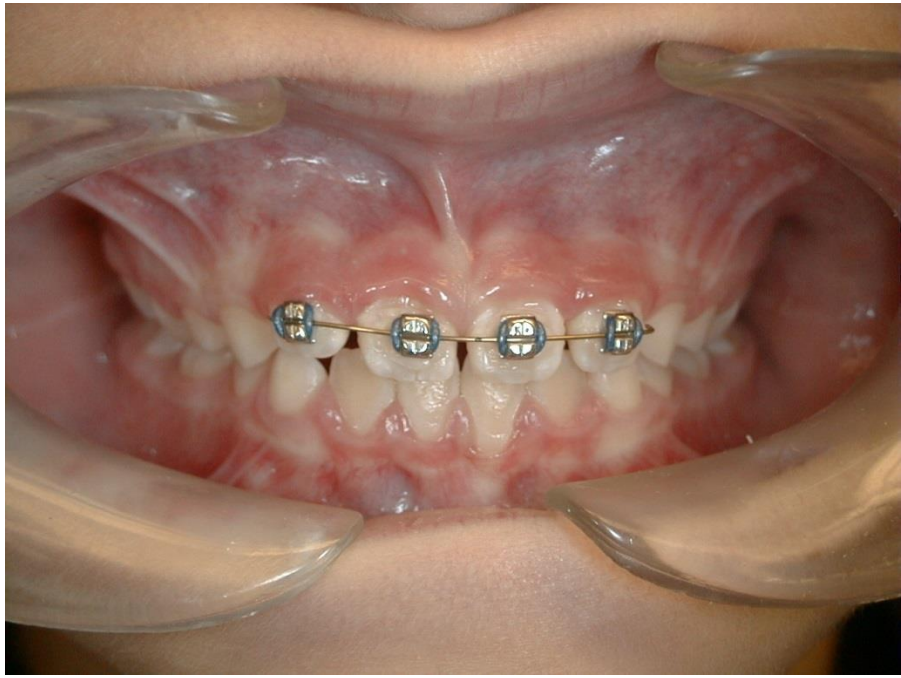
ADVANCE UPPER INCISORS ANTERIOR CROSSBITE

MIXED DENTITION ANTERIOR CROSSBITE

REMOVABLE APPLIANCE CLASPS; OCCLUSAL ACRYLIC FINGER SPRINGS

ANTERIOR CROSSBITE
LIMITED FIXED APPLIANCE

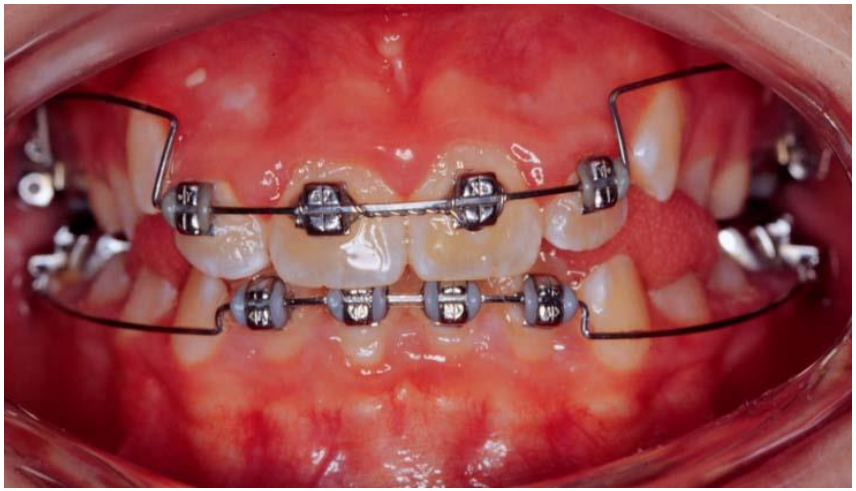




PRE-TREATMENT

POST-TREATMENT

ADVANCE INCISORS
ANTERIOR CROSSBITE

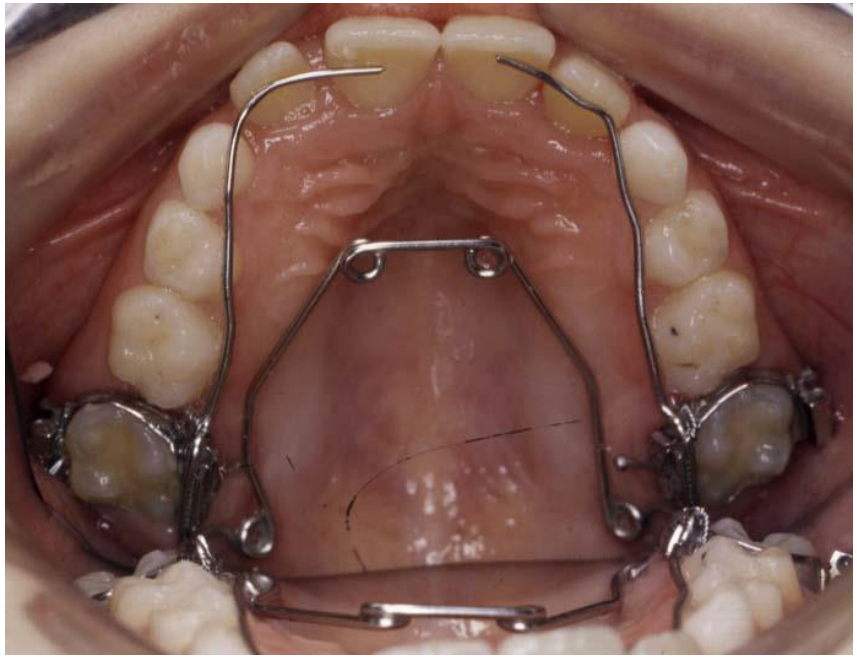


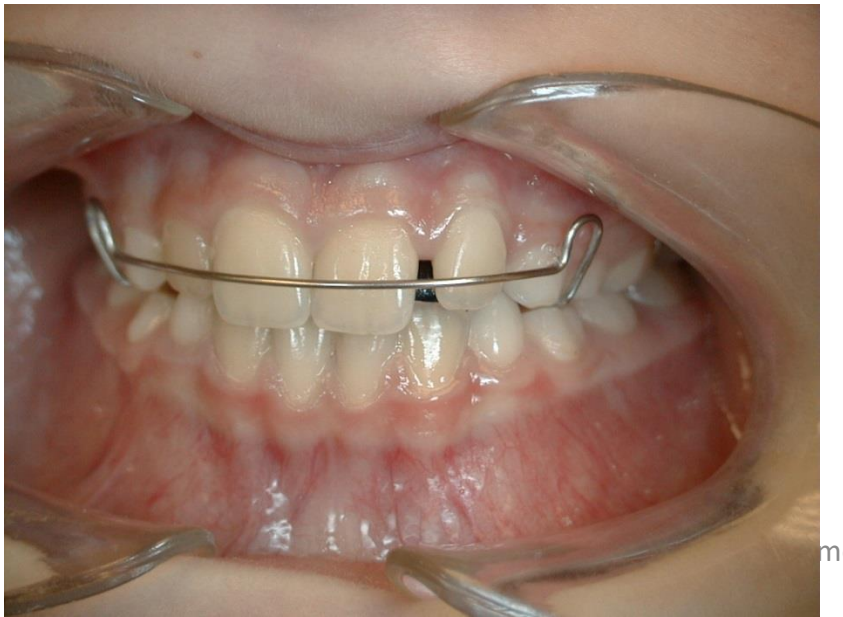
ANTERIOR CROSSBITE (ALSO BILATERAL POSTERIOR CROSSBITE)

PARTIAL FIXED APPLIANCE

Dr. Ahmed Basyouni

QUADHELIX





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ADVANCE INCISORS
ANTERIOR CROSSBITE
PSEUDO-CLASS III

MAXIMUM INTERCUSPATION
ANTERIOR CROSSBITE
UPPER ARCH CROWDING
UPPER MIDLINE RIGHT (CROWDING)

INITIAL CONTACT POSITION
FUNCTIONAL SHIFT (ANTERIOR+LATERAL

Objective: Level lower arch, Increase compensating curve, Extrude post. Teeth / increase vertical

- **Problem:**
  - **Overbite**
  - **Deep curve of Spee**
  - **Deep bite pattern (Brachyfacial).**
  - **Good lip line.**

- **Appliance:**
  - **Full arch mechanics**
  - **Anterior bite plate**
  - **Functional appl.**
  - **Cervical headgear.**
  - **Inter-arch elastics,**

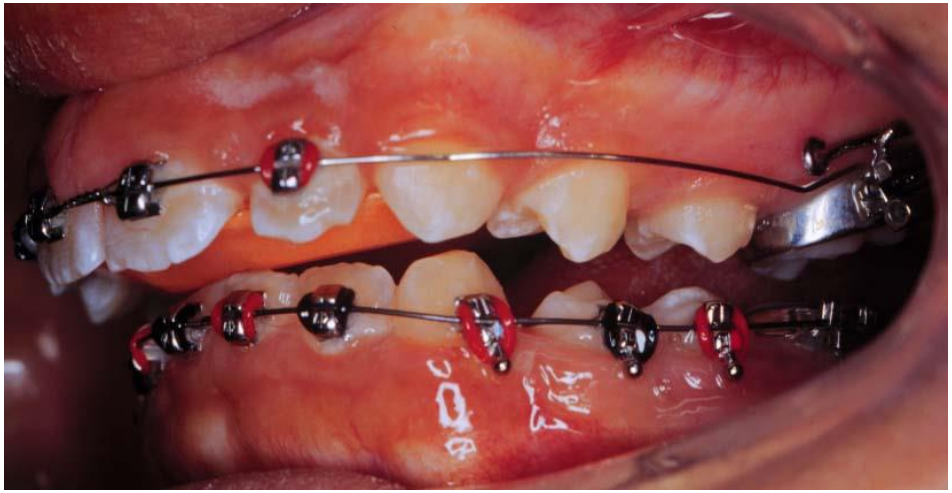
  (Class II, or Class III), Vertical elastics.

EXTRUDE POSTERIOR TEETH (INCREASE THE VERTICAL DIMENSION) DEEP OVERBITE

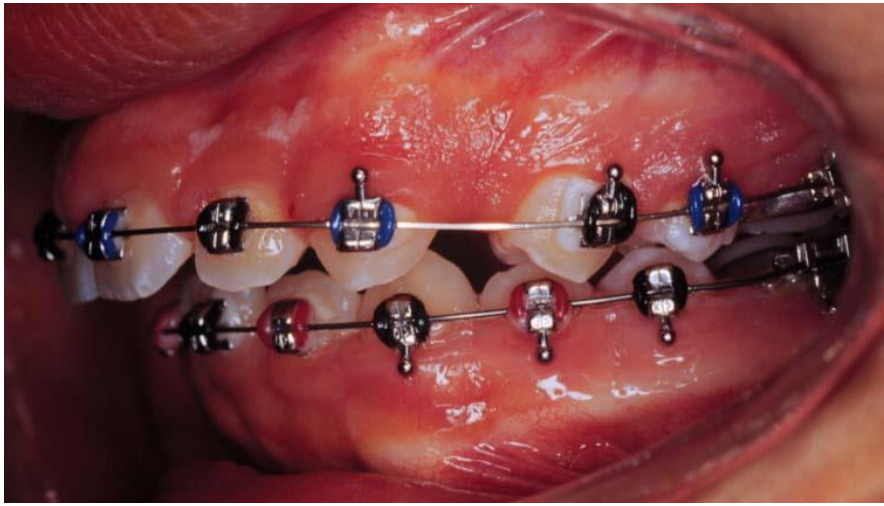
PRE-TREATMENT
DEEP OVERBITE

FIXED APPLIANCES
ANTERIOR BITE PLATE

EXTRUDE POSTERIOR TEETH (INCREASE THE VERTICAL DIMENSION) DEEP OVERBITE



INITIAL INSERTION OF ANTERIOR BITE PLATE



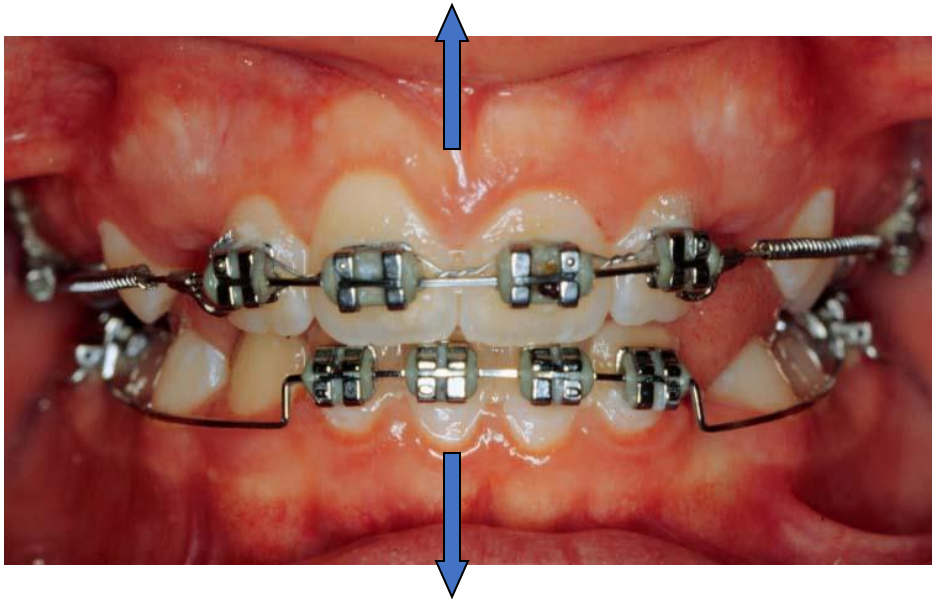
EFFECT OF ANTERIOR BITE PLATE + ARCH WIRES

Objective: Intrude Upper and/ or Lower Incisors

- **Problem:**
  - **Deep overbite**
  - **High lip line**
  - **Deep curve of Spee**
  - **Vertical pattern**
  - **Class II- distally tip upper molars**
  - **Upright lower molars- Avoid Lower Incisors advancement**

- **Appliance:**
  - **2X4 Incisor intrusion archwires/ Utility archwires.**

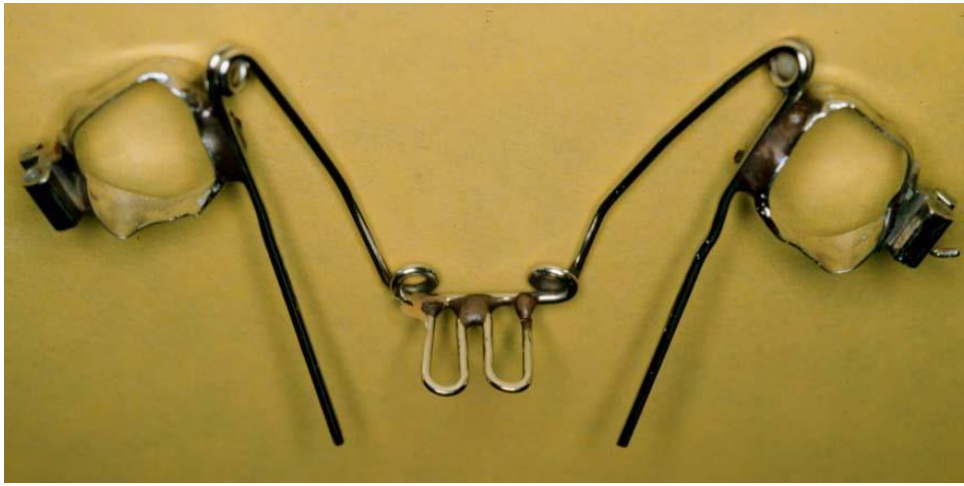
INCISOR INTRUSION
DEEP OVERBITE



PRETREATMENT
DEEP OVERBITE

EFFECTS OF
INTRUSION ARCH WIRES

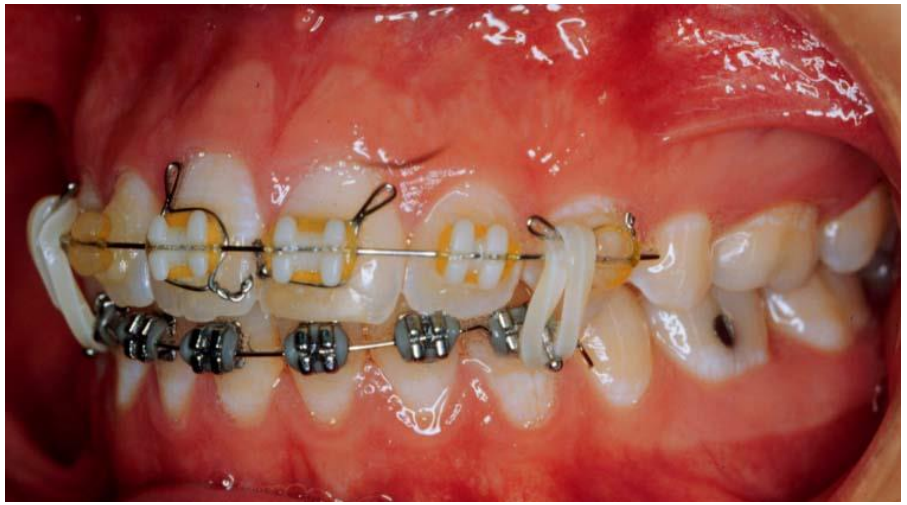
EXTRUDE UPPER INCISORS
ANTERIOR OPEN BITE
(THUMB/TONGUE HABIT)



THUMB/TONGUE CRIB

MIDDLE MIXED DENTITION
ANTERIOR OPEN BITE

EXTRUDE UPPER/LOWER INCISORS
ANTERIOR OPEN BITE
(THUMB/TONGUE HABIT)



FOLLOWING TONGUE CRIB
SPONTANEOUS
INCISOR ERUPTION

VERTICAL ELASTICS
WITH FIXED APPLIANCES

Objective: Control/Maintain Vertical dimension - Intrude Upper and/ or Lower Posterior Teeth

- **Problem:**
  - **Open bite**
  - **Vertical Pattern, Dolicofacial.**

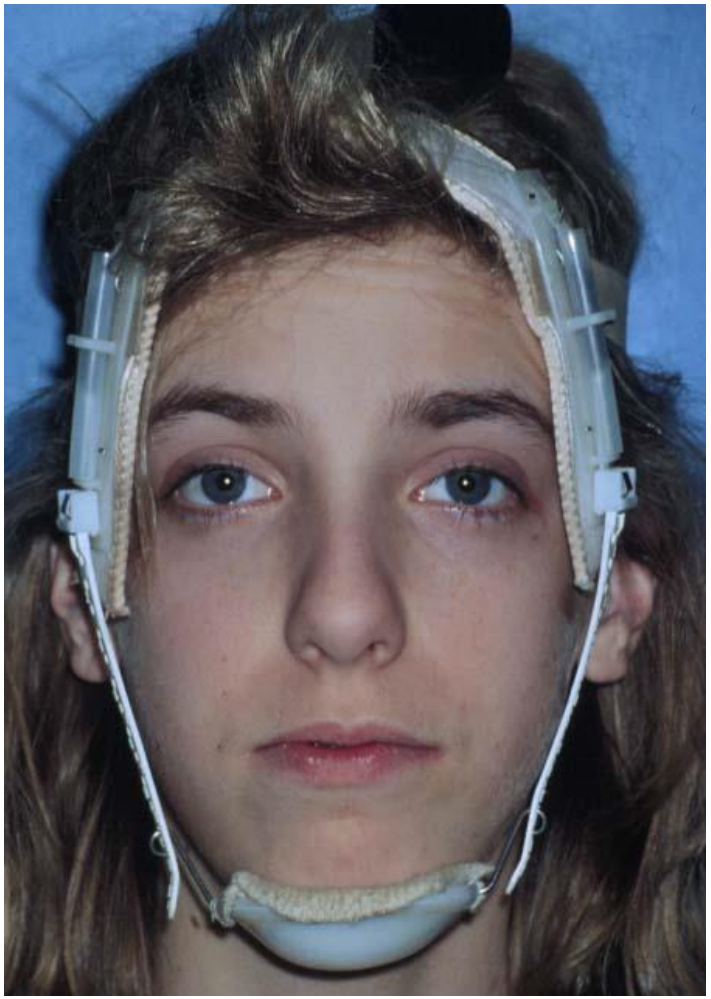
- **Appliance:**
  - **High pull headgear**
  - **Lower lingual arch**
  - **Occlusal splint**
  - **Vertical pull chin-cup**

CONTROL VERTICAL DEVELOPMENT
ANTERIOR OPEN-BITE
VERTICAL SKELETAL PATTERN

ANTERIOR OPEN BITE

VERTICAL SKELETAL PATTERN

CONTROL VERTICAL DEVELOPMENT
ANTERIOR OPEN-BITE
VERTICAL SKELETAL PATTERN



HIGH-PULL HEADGEAR VERTICAL PULL CHIN CUP

INTRUDE/HOLD POSTERIOR TEETH VERTICALLY

LOWER POSTERIOR BITE BLOCK (OCCLUSAL SPLINT)

- Who Works With Their Minds are **Scientists**.
- Who Works With Their Hearts are **Artists**.
- Who Works With Their Hands are **Workers**.
- Who Works With All of Them are **Orthodontists.**